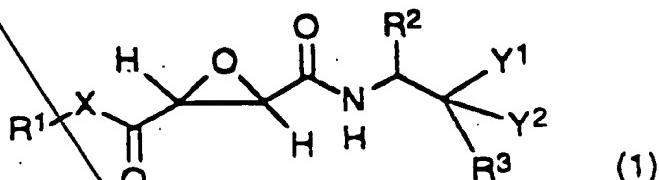


Claims for patent:

1. (amended) An epoxysuccinamide derivative having  
5 the following formula (1) and its physiologically accept-  
able salt:

10



wherein

15  $R^1$  represents a hydrogen atom, an alkyl group having 1 to 10 carbon atoms, an alkenyl group having 2 to 10 carbon atoms, an alkynyl group having 2 to 10 carbon atoms, an aryl group having 6 to 20 carbon atoms, an aralkyl group comprising an aryl group having 6 to 20 carbon atoms and an alkyl group having 1 to 6 carbon atoms,  
20 a heterocyclic group having 3 to 12 carbon atoms, or a heterocyclic-alkyl group comprising a heterocyclic group having 3 to 12 carbon atoms and an alkyl group having 1 to 6 carbon atoms;

25  $R^2$  represents an alkyl group having 1 to 10 carbon atoms, an alkenyl group having 2 to 10 carbon atoms, an alkynyl group having 2 to 10 carbon atoms, an aryl group having 6 to 20 carbon atoms, an aralkyl group comprising an aryl group having 6 to 20 carbon atoms and an alkyl group having 1 to 6 carbon atoms, a heterocyclic group having 3 to 12 carbon atoms, or a heterocyclic-alkyl group comprising a heterocyclic group having 3 to 12 carbon atoms and an alkyl group having 1 to 6 carbon atoms;  
30

35  $R^3$  represents a hydrogen atom, an alkyl group having 1 to 10 carbon atoms, an alkenyl group having 2 to 10

carbon atoms, an alkynyl group having 2 to 10 carbon atoms, an aryl group having 6 to 20 carbon atoms, an aralkyl group comprising an aryl group having 6 to 20 carbon atoms and an alkyl group having 1 to 6 carbon atoms, a heterocyclic group having 3 to 12 carbon atoms, or a heterocyclic-alkyl group comprising a heterocyclic group having 3 to 12 carbon atoms and an alkyl group having 1 to 6 carbon atoms;

X represents -O- or -NR<sup>4</sup>- in which R<sup>4</sup> is a hydrogen atom, an alkyl group having 1 to 10 carbon atoms, an aryl group having 6 to 20 carbon atoms, an aralkyl group comprising an aryl group having 6 to 20 carbon atoms and an alkyl group having 1 to 6 carbon atoms, a heterocyclic group having 3 to 12 carbon atoms, or a heterocyclic-alkyl group comprising a heterocyclic group having 3 to 12 carbon atoms and an alkyl group having 1 to 6 carbon atoms;

Y<sup>1</sup> represents a hydroxyl group, an alkoxy group having 1 to 6 carbon atoms, an acetoxy group, or an aralkyloxy group comprising an aryl group having 6 to 20 carbon atoms and an alkyl group having 1 to 6 carbon atoms; and

Y<sup>2</sup> represents a hydrogen atom or an alkyl group having 1 to 10 carbon atoms;

in which each of the aryl groups and the heterocyclic groups for R<sup>1</sup> to R<sup>4</sup> may have one or more substituents selected from the group consisting of alkyl having 1-6 carbon atoms, hydroxyl, amino, alkylamino having 1-6 carbon atoms, dialkylamino having 2-12 carbon atoms in total, alkoxy having 1-6 carbon atoms, halogen, haloalkyl having 1-6 carbon atoms, cyano, nitro, carboxyl, alkoxy-carbonyl having 2-7 carbon atoms, carbamoyl, alkylamino-carbonyl having 2-7 carbon atoms, dialkylaminocarbonyl having 3-13 carbon atoms in total, amidino, and guanidino.

2. The epoxysuccinamide derivative of the formula  
(1) and its physiologically acceptable salt defined in  
claim 1, wherein R<sup>1</sup> is a hydrogen atom or an alkyl group  
having 1 to 6 carbon atoms.

5

3. The epoxysuccinamide derivative of the formula  
(1) and its physiologically acceptable salt defined in  
claim 1 or 2, wherein R<sup>2</sup> is an alkyl group having 1 to 6  
carbon atoms, phenyl, or benzyl.

10

4. The epoxysuccinamide derivative of the formula  
(1) and its physiologically acceptable salt defined in  
any one of claims 1 to 3, wherein R<sup>3</sup> is a hydrogen atom or  
an aryl group having 6 to 20 carbon atoms.

15

5. The epoxysuccinamide derivative of the formula  
(1) and its physiologically acceptable salt defined in  
any one of claims 1 to 4, wherein X is -O-.

20

6. (deleted)

7. (deleted)

8. (deleted)

25

9. (deleted)

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10. (amended) The physiologically acceptable salt  
of the epoxysuccinamide derivative defined in any of  
claims 1 to 5, wherein the physiologically acceptable  
salt is an alkali metal salt.

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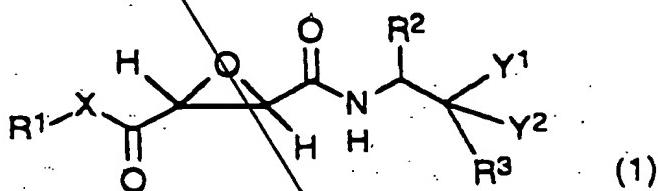
11. (amended) A remedy for treating bone diseases  
which comprises the epoxysuccinamide derivative or its  
physiologically acceptable salt defined in any one of  
claims 1 to 5 or claim 10.

12. (amended) A remedy for treating arthritis which comprises the epoxysuccinamide derivative or its physiologically acceptable salt defined in any one of claims 1 to 5 or claim 10.

5

13. (added) An epoxysuccinamide derivative having the following formula (1) and its physiologically acceptable salt:

10



15 wherein

R<sup>1</sup> represents a hydrogen atom, an alkyl group having 1 to 10 carbon atoms, an alkenyl group having 2 to 10 carbon atoms, an alkynyl group having 2 to 10 carbon atoms, an aryl group having 6 to 20 carbon atoms, an aralkyl group comprising an aryl group having 6 to 20 carbon atoms and an alkyl group having 1 to 6 carbon atoms, a heterocyclic group having 3 to 12 carbon atoms, or a heterocyclic-alkyl group comprising a heterocyclic group having 3 to 12 carbon atoms and an alkyl group having 1 to 6 carbon atoms;

R<sup>2</sup> represents an isobutyl group or an isopropyl group;

R<sup>3</sup> represents a hydrogen atom or an aryl group having 6 to 20 carbon atoms;

X represents -O- or -NR<sup>4</sup>- in which R<sup>4</sup> is a hydrogen atom, an alkyl group having 1 to 10 carbon atoms, an aryl group having 6 to 20 carbon atoms, an aralkyl group comprising an aryl group having 6 to 20 carbon atoms and an alkyl group having 1 to 6 carbon atoms, a heterocyclic group having 3 to 12 carbon atoms, or a heterocyclic-alkyl group comprising a heterocyclic group having 3 to

12 carbon atoms and an alkyl group having 1 to 6 carbon atoms;

Y<sup>1</sup> represents OR<sup>5</sup> in which R<sup>5</sup> is a hydrogen atom, an alkyl group having 1 to 10 carbon atoms, an aryl group having 6 to 20 carbon atoms, an aralkyl group comprising an aryl group having 6 to 20 carbon atoms and an alkyl group having 1 to 6 carbon atoms, an acyl group having 2 to 20 carbon atoms, a heterocyclic group having 3 to 12 carbon atoms, or a heterocyclic-alkyl group comprising a heterocyclic group having 3 to 12 carbon atoms and an alkyl group having 1 to 6 carbon atoms; and

Y<sup>2</sup> represents a hydrogen atom;

in which the alkyl group for R<sup>5</sup> may have one or more substituents selected from the group consisting of hydroxyl, amino, alkylamino having 1-6 carbon atoms, dialkylamino having 2-12 carbon atoms in total, alkoxy having 1-6 carbon atoms, carboxyl, alkoxycarbonyl having 2-7 carbon atoms, carbamoyl, alkylaminocarbonyl having 2-7 carbon atoms, dialkylaminocarbonyl having 3-13 carbon atoms in total, and guanidino, and

in which each of the aryl groups and the heterocyclic groups for R<sup>1</sup>, R<sup>3</sup> and R<sup>5</sup> may have one or more substituents selected from the group consisting of alkyl having 1-6 carbon atoms, hydroxyl, amino, alkylamino having 1-6 carbon atoms, dialkylamino having 2-12 carbon atoms in total, alkoxy having 1-6 carbon atoms, halogen, haloalkyl having 1-6 carbon atoms, cyano, nitro, carboxyl, alkoxy-carbonyl having 2-7 carbon atoms, carbamoyl, alkylaminocarbonyl having 2-7 carbon atoms, dialkylaminocarbonyl having 3-13 carbon atoms in total, amidino, and guanidino.

14. (added) The epoxysuccinamide derivative of the formula (1) and its physiologically acceptable salt defined in claim 13, wherein R<sup>1</sup> is a hydrogen atom or an alkyl group having 1 to 6 carbon atoms.

15. (added) The epoxysuccinamide derivative of the formula (1) and its physiologically acceptable salt defined in claim 13 or 14, wherein X is -O-.

5 16. (added) The physiologically acceptable salt of the epoxysuccinamide derivative defined in any one of claims 13 to 15, wherein the physiologically acceptable salt is an alkali metal salt.

10 17. (added) A remedy for treating bone diseases which comprises the epoxysuccinamide derivative or its physiologically acceptable salt defined in any one of claims 13 to 16.

15 18. (added) A remedy for treating arthritis which comprises the epoxysuccinamide derivative or its physiologically acceptable salt defined in any one of claims 13 to 16.

20 19. (added) An epoxysuccinamide derivative selected from the group consisting of the following compounds and its physiologically acceptable salt:

ethyl (2S,3S)-3-[(1-(S)-benzoyl-3-methylbutyl)-carbamoyl]oxirane-2-carboxylate;

25 ethyl (2S,3S)-3-[(1-(S)-benzoyl-2-methylpropyl)-carbamoyl]oxirane-2-carboxylate;

ethyl (2S,3S)-3-[(1-(S)-(benzoylamino)methyl-3-methylbutyl)carbamoyl]oxirane-2-carboxylate;

30 ethyl (2S,3S)-3-[(1-(S)-(2-methyl-2-propenyl)oxy)-methyl-3-methylbutyl]carbamoyl]oxirane-2-carboxylate;

ethyl (2S,3S)-3-[(1-(S)-(hexanoylamino)methyl-3-methylbutyl)carbamoyl]oxirane-2-carboxylate;

ethyl (2S,3S)-3-[(1-(S)-(N-benzyl-N-methylamino)methyl-3-methylbutyl)carbamoyl]oxirane-2-carboxylate;

35 and,

ethyl (2S,3S)-3-[(1-(S)-(N-hexyl-N-methylamino)-

methyl-3-methylbutyl] carbamoyl] oxirane-2-carboxylate.

20. (added) A remedy for treating bone diseases  
which comprises the epoxysuccinamide derivative or its  
5 physiologically acceptable salt defined in claim 19.

21. (added) A remedy for treating arthritis which  
comprises the epoxysuccinamide derivative or its physio-  
logically acceptable salt defined in claim 19

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